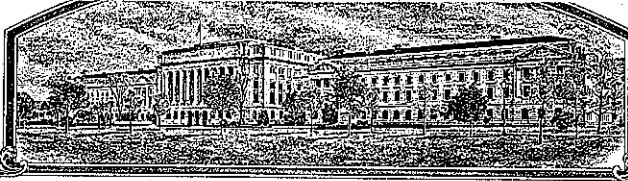


No.

9800329



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Cours Brewing Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

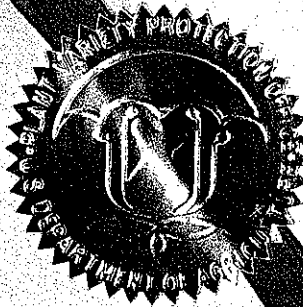
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR OTHER VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED, AND SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Moravian 22'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this seventh day of May, in the year two thousand and four.

Attest:



[Signature]

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service


Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Coors Brewing Company		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME C22		3. VARIETY NAME Moravian 22	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 12th and East Street Golden, Colorado 80401 United States of America		5. TELEPHONE (include area code) (303) 279-6565		FOR OFFICIAL USE ONLY PVPO NUMBER 9800329 FILING DATE June 26, 1998	
		6. FAX (include area code) (303) 277-6426			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Colorado		9. DATE OF INCORPORATION June 12, 1913	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Jay K. Malkin KLAAS, LAW, O'MEARA & MALKIN, P.C. 1999 Broadway, Suite 2225 Denver, Colorado 80202				FILING AND EXAMINATION FEES: \$ 2450.00 DATE 6/26/98 CERTIFICATION FEE: \$ 432.00 DATE 4/15/2004	
11. TELEPHONE (include area code) (303) 298-9888		12. FAX (include area code) (303) 297-2266		13. E-MAIL KLAASLAW@WORLDNET.ATT.NET	
14. CROP KIND (Common Name) 2-Row Spring Malting Barley					
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) (NOTE: All of these items were filed with original Application Form on 6/26/98)			19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input type="checkbox"/> NO (If "no," go to item 22)		
			20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		
			21. DOES THE OWNER SPECIFY THAT THE CLASSES BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1, 2, 3, etc. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)		
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)			23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)		
24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER Coors Brewing Company 			SIGNATURE OF OWNER		
NAME (Please print or type) Hugo Patino			NAME (Please print or type)		
CAPACITY OR TITLE Vice President of Quality, Research and Development		DATE May 18, 2000.		CAPACITY OR TITLE	
				DATE	

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (*See Section 97.6 of the Regulations and Rules of Practice.*) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (*See Regulations and Rules of Practice, Section 97.103.*)
21. See Section 83 of the Act for the Contents and Term of Plant Variety Protection.
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (*Please provide a statement as to the limitation and sequence of generations that may be certified.*)
The following transfers/sales to Applicant's contract growers are noted (all from Burley, ID): (1) to Montana (USA) in Jan. 1998 for growing/testing; (2) to Montana (USA) in Feb. 1999 for large-scale production (to be used in beer made by Applicant); and (3) to Canada and Montana (USA) in Feb. 2000 [continued production in Montana; testing in Canada]. Also noted are various tests conducted in Idaho by the University of Idaho (1996 - 1998) on the variety.

22. CONTINUED FROM FRONT (*Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.*)

→ ANSWER for Q. #22
Should be here.

MAY 7-10-2004

23. CONTINUED FROM FRONT (*Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).*)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (*See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.*)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

S&T-470 (2-99) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (6-98) which is obsolete.

Origin and Breeding History of Variety Moravian 22

1. GENEALOGY/BREEDING PEDIGREE:

(A) Cross breeding and selection of the claimed variety (previously identified by temporary/experimental number "C22" but now designated hereinafter as "Moravian 22" which shall be considered the final variety name thereof) was performed by Dennis J. Dolan, Berry J. Treat, Jody L. Treat, James M. Jakicic, David J. Gebhardt, and Paul A. Krumm beginning in 1987 at the Coors Brewing Company Malting Barley Research Center, Burley ID (USA).

(B) The origin of Moravian 22 is as follows:

Moravian 22 origin =

1) (Moravian III [female] x Summit [male]), with the product of this cross being crossed with Harrington [male] to yield a further product designated herein for informational purposes as "AC84-32-3".

2) The product of the crosses set forth above in breeding sequence [1] (e.g. AC84-32-3) was then crossed (as a female) with the product from the following additional cross: (Triumph [female] x Moravian III [male]). For informational purposes, the product of (Triumph [female] x Moravian III [male]) is designated herein as "MS84-1" [male].

In summary, the entire breeding sequence is as follows:

[(Moravian III x Summit) x Harrington] x [(Triumph x Moravian III)] or, expressed in another manner, "Moravian III/Summit//Harrington (AC84-32-3)///Triumph/Moravian III (MS84-1)".

Background information regarding the above-listed parental varieties is as follows:

(i) Moravian III - This variety was developed by the Coors Brewing Company of Golden, CO (USA) in 1972. It was specifically obtained from the following crosses: (A) [(Moravian II [female] x Firlbecks III [male]) x (Moravian II [female] x Saxonia [male])]; and (B) The product of [A] crossed with 5*Moravian II [male], with the "5*" designation indicating that the Moravian variety used in the above procedure was backcrossed five (5) times.

Expressed another way, Moravian III was produced according to the following sequence: "Moravian II/Firlbecks III//Moravian II/Saxonia///5*Moravian II".

(ii) Summit - This variety was developed by North American Plant Breeders Inc. of Berthoud, CO (USA) in 1977. It was specifically obtained from the following crosses: (A) [(HP1203 [female] x Zephyr [male]) x (Tern [male])].

Expressed another way, Summit was produced according to the following sequence: "HP1203//Zephyr/Tern".

(iii) Harrington - This variety was developed by the University of Saskatchewan of Saskatoon, Saskatchewan (Canada) in 1981. It

was specifically obtained from the following crosses: (A) [(Gazelle [female] x Betzes [male]) x (Centennial [male])]; and (B) The product of [A] crossed with Klages [female].

Expressed another way, Harrington was produced according to the following sequence: "Klages/3/Gazelle/Betzes//Centennial".

(iv) Triumph - This variety was developed by VEB Saat-und-Pflanzenzucht in the former German Democratic Republic (East Germany) in 1976. It was specifically obtained from the following cross: (A) [(Diamant [female] x St. 1402964-9 [male])].

Expressed another way, Triumph was produced according to the following sequence: "Diamant/St. 1402964-9".

The above-listed data represents all of the information Applicant currently has in its possession regarding the foregoing parental varieties. In a telephone conversation between Dennis J. Dolan (a Breeder employed by Applicant) and Dr. Alan A. Atchley of the PVPO which occurred on or about 4/27/98, it was indicated that the above information would be sufficient to satisfy the information requirements associated with this portion of the current application.

2. DETAILS OF SUBSEQUENT STAGES OF SELECTION AND MULTIPLICATION:

(a) The basic cross between AC84-32-3 and MS84-1 (see above for an explanation of these terms) was undertaken by the Coors Brewing Company in a greenhouse located in Golden, CO (USA) during late fall of 1987. F1 seeds from this cross were

harvested (e.g. from cross number 127) and increased by planting at the Coors Brewing Company Malting Barley Research Station in Burley ID (USA) during the summer of 1988.

(b) F2 seeds were then planted in New Zealand during the winter of 1988 (extending into 1989) for seed increase. These seeds were harvested in early 1989.

(c) F3 plants from the seeds listed above in connection with step [b] were then sown at the Coors Brewing Company Malting Barley Research Station in Burley ID (USA) during the summer of 1989.

(d) Head selections were increased in single F4 rows in New Zealand during the winter of 1989 (extending into 1990).

(e) The product of the growing trials listed above in step [d] were bulked and included in an F5 observation nursery at the Coors Brewing Company Malting Barley Research Station in Burley ID (USA) in the summer of 1990. The first line from the procedures outlined above was initially designated as "AC88-127-1". This line was selected for advancement based on expression of superior agronomic and malting characteristics, as well as high yield and very plump seed.

(f) AC88-127-1 was first planted in replicated/multiple location yield trials in the spring/summer of 1991. Heads were selected from plots in 1991 for purification at the Coors Brewing Company Malting Barley Research Station in Burley ID (USA). Head selections were increased in New Zealand during the winter of 1991 (extending into 1992) in order to provide a seed source for breeders seed. Based on agronomic and malt quality test data,

AC88-127-1 was advanced and breeders seed was planted in the summer of 1992. At that time, AC88-127-1 was given the temporary/experimental designation "Coors 22" or simply "C22". This variety (e.g. C22) passed pilot-scale malt and brew testing done by the Coors Brewing Company at its main facility in Golden CO (USA) in 1992-1993. Foundation seed was then grown and certified by the Idaho Crop Improvement Association in 1993. Registered seed was subsequently grown and certified by the Idaho Crop Improvement Association in 1994. Thereafter, C22 entered production scale malting and brewing tests at the Coors Brewing Company main facility in Golden CO (USA) during 1994-1995. In 1998, C22 was renamed "Moravian 22".

3. EVIDENCE OF UNIFORMITY AND STABILITY:

Field scale acreage of Moravian 22 (for production testing and/or seed increase) has been grown since 1993. The frequency of variants has consistently remained very low, namely, less than one (1) plant in twenty-thousand (20,000) or about 0.0005%. Accordingly, no significant genetic variants have been noted.

In a telephone conference which occurred on or about 4/27/98 between Dennis J. Dolan (a Breeder employed by Applicant) and Dr. Alan A. Atchley of the PVPO, it was indicated to Mr. Dolan by Dr. Atchley that the above-listed recitation would be sufficient to satisfy all requirements involving this Exhibit as it related to stability and uniformity. 'Moravian 22' has been observed to be Uniform and stable over seven generations.

per correspondence
of May 19, 2000
MAH 3/20/2004

4. TYPE AND FREQUENCY OF VARIANTS OBTAINED DURING
REPRODUCTION/MULTIPLICATION:

No significant frequency of variants has been identified within Moravian 22 seed stocks as indicated above. Specifically, the frequency of variants has consistently remained very low, namely, less than one (1) plant in twenty-thousand (20,000) or about 0.0005% (Estimated frequency of variants that might be expected).

No variants have been observed.

per correspondence
of May 19, 2000
MAH 3/20/04

5. SELECTION CRITERIA: To assist in the examination and assessment of this application, specific information will now be provided regarding the selection criteria associated with Moravian 22. Such criteria were generally based on agronomic and malting-brewing performance, with the specific selection criteria of concern being as follows: (1) high yield; (2) plant height; (3) nodding characteristics; (4) disease resistance; (5) overall plant type; (6) kernel discoloration; (7) test weight; (8) % plump kernels (e.g. > 6/64 inches); (9) % protein; (10) early maturity; (11) seed uniformity; (12) malting quality; (13) beer flavor; and (14) lodging resistance. Regarding malting and brewing characteristics, about twenty-five [25] individual factors are observed and characterized. Additional information concerning the breeding of Moravian 22 is provided above in this Exhibit.

Exhibit B - Statement of Distinctness

On or about June 14, 1996, Dennis J. Dolan (a Breeder employed by Applicant) spoke with Dr. Alan A. Atchley of the Plant Variety Protection Office ("PVPO") regarding the submission of protein profile information as evidence of distinctiveness in connection with this Exhibit and the statutory requirements of the Plant Variety Protection Act ("PVPA"). During this conversation, Mr. Dolan received approval for this approach in satisfaction of the requirements listed above. Accordingly, detailed protein profile data (which provides clear and convincing evidence of distinctiveness in this case) will now be presented.

The variety claimed in this case (Moravian 22) is a highly distinctive malting barley developed for optimal performance under irrigated production in the intermountain areas of Southern Idaho, Colorado, Southwest Montana, and Wyoming. Moravian 22 has good resistance to lodging, low protein values, good yield potential, and very plump seed. In accordance with tests conducted during 1993-1997 (See the general information provided in Exhibit A), Moravian 22 showed a 6.0% improvement in plump seed percent yield over a designated "control" variety (e.g. "Galena" which is the subject of Plant Variety Certificate No. 8900268 issued on 3/31/93, with this variety also being owned by Applicant Coors Brewing Company) in Southern Idaho yield trials. Furthermore, large-scale field trials have indicated a greater resistance to stressful growing conditions.

Iso-electric focusing (hereinafter "IEF") and staining of hordein proteins was used to clearly distinguish Moravian 22 from its parents and related cultivars. The term "hordein" involves a

particular type of protein found in the endosperm of, for example, barley and other plants. Hordein protein profiles are distinctive from one plant variety to another and are therefore an excellent indicator of varietal distinctiveness. Samples of the seven (7) varieties (e.g. parental and related cultivars) that were tested are listed below in TABLE I. The analytical procedures associated with the IEF tests outlined in this Exhibit were undertaken by STA Laboratories of 630 S. Sunset Street, Longmont CO (USA) 80501; Telephone: 800-426-9124; Fax: 303-772-4003; E-mail: sta@frii.com, with additional information regarding these procedures being presented/discussed below.

'Moravian 22' is most similar to 'Moravian III' and 'Harrington'.

per correspondence
of May 19, 2000
MAH 3/20/2004

TABLE I

Sample #	Cultivar	Description	Pedigree (See Ex. A)
5	Moravian 22	The claimed variety	AC84-32-3/MS84-1
6	AC84-32-3	Parent	Moravian III/Summit//Harrington
7	MS84-1	Parent	Triumph/Moravian III
8	Moravian III	Parent/reference	Moravian II/Firlbecks III//Moravian II/Saxonia///5*Moravian II
9	Summit	Parent/reference	HP1203//Zephyr/Tern
10	Harrington	Parent/reference	Klages/3/Gazelle/Betzes//Centennial
11	Triumph	Parent/reference	Diamant/St. 1402964-6

As noted above, the IEF tests involving the barley varieties of interest were undertaken at the direction of the Coors Brewing Company (Applicant) by STA Laboratories, Inc. of Longmont CO (USA). Included as Attachment B-1 is the specific test protocol that was employed in implementing the tests. The tests were conducted during October-November of 1996 as verified by the Certificate of Analysis included as Attachment B-2.

Discussion of Test Results:

Provided with this Exhibit as Attachment B-3 is an actual original gel film showing the protein-banding patterns associated with all of the samples (e.g. barley varieties) listed above (including Moravian 22). Each banding pattern is appropriately labelled with a number corresponding to the sample numbers presented in TABLE I. A visual review of the banding patterns presented in the gel film of Attachment B-3 clearly demonstrates that the pattern associated with Moravian 22 (Sample #5) is **distinctively different** compared with the other patterns presented in the film. Thus, the distinctive banding pattern provided by Moravian 22 clearly indicates that it has a **unique hordein protein profile**.

In addition, TABLE II below involves a protein band characterization of each barley variety listed in TABLE I. The data in TABLE II likewise demonstrates that significant differences exist between Moravian 22 and the other designated varieties. In TABLE II (which involves the presence or absence of particular hordein proteins as characterized by iso-electric focusing [IEF]), the use of a "+" indicates the presence of a hordein protein band, while a "-" denotes the lack of a hordein protein band.

TABLE II

Sample #	Cultivar	Hordein Protein Bands					
		A	B	C	D	E	F
5	Moravian 22	-	+	+	+	+	-
6	AC84-32-3	+	-	+	+	-	+
7	MS84-1	-	-	+	+	-	+
8	Moravian III	+	-	+	+	-	+
9	Summit	-	-	-	+	+	+
10	Harrington	+	-	+	+	-	-
11	Triumph	-	+	+	-	-	-

As clearly shown in TABLE II (and in the accompanying gel film of Attachment B-3), the protein banding profile associated with Moravian 22 is substantially different compared with the other listed varieties. Specifically, none of the other varieties includes a banding profile which, as shown above, involves the (-), (+), (+), (+), (+), (-) sequence listed in TABLE II. Accordingly, the information provided in this Exhibit constitutes clear and convincing evidence of distinctiveness which satisfies all statutory requirements.

Identification of Barley Varieties by IEF and Staining of Hordein Proteins

1. Individual Barley seeds are crushed and placed into a microcentrifuge tube.
2. Add 0.12 ml of 2-chloroethanol to each tube and vortex for 30 seconds.
3. Place samples at 4° C for 24 hours.
4. Samples are electrophoresed on an IsoLab 1040 gel using 10 µl from each seed extraction as described by IsoLab protocols.
5. Gels are fixed in 20% trichloroacetic acid for 60 minutes.
6. Gels are washed in 0.5% trichloroacetic acid for 45 minutes.
7. Proteins are visualized in a staining solution (200 ml) containing 0.1% Coomassie Brilliant Blue G-250, 11% phosphoric acid, 0.5% trichloroacetic acid. Staining is complete in 1-3 hours.

630 South Sunset Street
Longmont, Colorado
80501

STA
LABORATORIES
AGRICULTURAL TESTING SERVICES

Toll Free (800) 426-9124
Phone (303) 651-6417
Fax (303) 772-4003
E-mail: sta@frii.com

Lot Number: ELEVEN SAMPLES
Submitted As: BARLEY
Project: PVP IDENTIFICATION

Lab #: 123-1-41028

COORS RESEARCH & DEVELOPMENT
Attn: BERRY TREAT 279-6565
400 W. HIGHWAY 30
BURLEY, ID 83318

Phone: 208-678-4994 Fax: 208-678-9669
CC: DENNIS DOLAN

Date Received: 10/14/1996
Date Started: 10/30/1996
Date Reported: 11/13/1996

Sample Information

Source: COORS
Condition: UNTREATED
PO Number: 9800329

9800329 9800329

CERTIFICATE OF ANALYSIS

PURPOSE OF TEST: TWO BARLEY SAMPLES WERE SUBMITTED ALONG WITH NINE REFERENCE SAMPLES. FOR PVP REGISTRATION, SAMPLE 1 MUST BE DISTINGUISHED FROM SAMPLES 2, 3, AND 4. SAMPLE 5 MUST BE DISTINGUISHED FROM 6, 7, 8, 9, 10, AND 11. *

TEST METHOD: HORDEIN PROTEINS WERE EXTRACTED IN 2-CHLOROETHANOL, SEPARATED BY ISOELECTRIC FOCUSING AND STAINED WITH A GENERAL PROTEIN STAIN (BRILLIANT BLUE G-250).

TEST RESULTS: BARLEY VARIETIES CAN BE DISTINGUISHED AS DESCRIBED ABOVE BY ELECTROPHORESIS OF HORDEINS.

Only samples numbered 5-11 represent varieties tested for Moravian 22 PVP application.

ATTACHMENT B-2

Prepared By:

Daniel J. LaFlamme
Daniel J. LaFlamme, Ph.D.
MOLECULAR/GENETICS MANAGER

This analysis is based on the sample received, not a guarantee of the lot or sample from which it was taken. The representative nature of the sample is the responsibility of the sender. Variety name or lot number when stated, is furnished by the sender. STA Laboratories shall keep confidential the client's proprietary information and test results. STA shall have no other liability for proprietary information. The liability of STA, under any circumstance, shall not exceed the amount paid for this analysis. EXCEPT AS STATED ABOVE, STA MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, FOR TESTING SERVICES.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICEEXHIBIT C
(Barley)

BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
BARLEY (*HORDEUM VULGARE*)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Coors Brewing Company

FOR OFFICIAL USE ONLY

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

12th and East Street, Golden, Colorado 80401

United States of America

PVPO NUMBER

9800329

VARIETY NAME OR TEMPORARY
DESIGNATIONPlace the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (i.e. or) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

 1 = SPRING 2 = FACULTATIVE WINTER 3 = WINTER Early Growth: 1 = PROSTRATE 2 = SEMIPROSTRATE
3 = ERECT

2. MATURITY (50% Flowering):

 1 = EARLY (California Mariout) 2 = MIDSEASON (Betzes) 3 = LATE (Frontier) No. of days Earlier than 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON
 No. of days Later than 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8. Galena 9. Harrington

3. PLANT HEIGHT (From soil level to top of head):

 1 = SEMIDWARF 2 = SHORT (California Mariout) 3 = MEDIUM TALL (Betzes) 4 = TALL (Conquest) Cm. Shorter than 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON
 Cm. Taller than 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8. Galena 9. Harrington

4. STEM:

 Exsertion (Flag to spike at maturity): 1 = 0-3 cm. 2 = 3-10 cm. Anthocyanin: 1 = ABSENT 2 = PRESENT
3 = 10-15 cm. NO. OF NODES (Originating from node above ground) Collar Shape: 1 = CLOSED 2 = V-SHAPED 3 = OPEN Shape of Neck: 1 = STRAIGHT 2 = SNAKY
4 = MODIFIED CLOSED OR OPEN 3 = OTHER (Specify) slightly snaky

5. LEAF:

 Basal leaf sheath (seedling): 1 = GLABROUS 2 = PUBESCENT Position of flag leaf (at boot stage): 1 = DROOPING
2 = UPRIGHT Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY MM. WIDTH (First leaf below flag leaf) CM. LENGTH (First leaf below flag leaf) Anthocyanin in leaf sheath: 1 = ABSENT 2 = PRESENT

6. HEAD:

 Type: 1 = TWO-ROWED 2 = SIX-ROWED Density: 1 = LAX 2 = ERECT (Not dense)
3 = ERECT (Dense) Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY
4 = OTHER (Specify): 3 = WAXY Lateral Kernels Overlap: 1 = NONE 2 = AT TIP Rachis (Hair on edge): 1 = LACKING 2 = FEW 3 = COVERED
3 = 1/4-1/2 OF HEAD

7. GLUME:

 Length: 1 = 1/3 OF LEMMA 2 = 1/2 OF LEMMA Hairs: 1 = NONE 2 = SHORT 3 = LONG
3 = MORE THAN 1/2 OF LEMMA Hair covering: 1 = NONE 2 = RESTRICTED TO MIDDLE 3 = CONFINED TO BAND 4 = COMPLETELY COVERED Awns: 1 = LESS THAN EQUAL TO LENGTH OF GLUMES 2 = EQUAL TO LENGTH OF GLUMES
3 = MORE THAN EQUAL TO LENGTH OF GLUMES Awn Surface: 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

8. LEMMA:

- ☐ 5 Awn: 1 - AWNLESS 2 - AWNLETS ON CENTRAL ROWS AWNLESS ON LATERAL ROWS
 3 - SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 - SHORT (less than equal to length of spike)
 5 - LONG (longer than spike) 6 - HOODED
- ☐ 4 Awn Surface: 1 - AWNLESS 2 - SMOOTH 3 - SEMISMOOTH 4 - ROUGH
- ☐ 3 Teeth: 1 - ABSENT 2 - FEW 3 - NUMEROUS ☐ 1 Hair: 1 - ABSENT 2 - PRESENT
- ☐ 3 Shape of base: 1 - DEPRESSION 2 - SLIGHT CREASE
 3 - TRANSVERSE CREASE ☐ 2 Rachilla Hairs: 1 - SHORT 2 - LONG

9. STIGMA:

- ☐ 1 Hairs: 1 - FEW 2 - MANY

10. SEED:

- ☐ 2 Type: 1 - NAKED 2 - COVERED ☐ 2 Hairs on Ventral Furrow: 1 - ABSENT 2 - PRESENT
- ☐ 4 Length: 1 - SHORT (8.0 mm.) 2 - SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 - MIDLONG (8.5 - 9.5 mm.)
 4 - MIDLONG TO LONG (9.0 - 10.5 mm.) 5 - LONG (10.0 mm.)
- ☐ 2 Wrinkling of hull: 1 - NAKED 2 - SLIGHTLY WRINKLED 3 - SEMIWRINKLED 4 - WRINKLED
- ☐ 1 Aleurone Color: 1 - COLORLESS (White or Yellow) 2 - BLUE
- ☐ 0 ☐ 4 PERCENT ABORTIVE ☐ 4 ☐ 0 GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

- ☐ 0 SEPTORIA ☐ 0 NET BLOTCH ☐ 1 SPOT BLOTCH ☐ 2 POWDERY MILDEW
- ☐ 0 LOOSE SMUT ☐ 0 BACTERIAL BLIGHT ☐ 0 COVERED SMUT ☐ 0 FALSE LOOSE SMUT
- ☐ 0 STEM RUST ☐ 0 LEAF RUST ☐ 1 SCAB ☐ 0 SCALD
- ☐ 0 AY ☐ 0 BSMV ☐ 0 BYDV ☐ 0 OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

- ☐ 0 GREEN BUG ☐ 0 ENGLISH GRAIN APHID. ☐ 0 CHINCH BUG ☐ 0 ARMYWORM
- ☐ 0 GRASS HOPPERS ☐ 0 CERIAL LEAF BETTLE ☐ 0 OTHER (Specify)
- HESSIAN FLY RACES } ☐ 0 GP ☐ 0 A ☐ 0 B ☐ 0 C
☐ 0 D ☐ 0 E ☐ 0 F ☐ 0 G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

- ☐ 0 DDT ☐ 0 OTHER (Specify)

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Moravian III	Seed size	Harrington
Leaf size	Moravian III	Coleoptile elongation	Harrington
Leaf color	Harrington	Seedling pigmentation	Moravian III
Leaf carriage	Moravian III		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) Coors Brewing Company	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER C22	3. VARIETY NAME Moravian 22
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 12th and East Street Golden, Colorado 80401 United States of America	5. TELEPHONE (include area code) (303) 279-6565	6. FAX (include area code) (303) 277-6426
7. PVPO NUMBER 9800329		
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO
If no, give name of country10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

All of the specific individuals listed above in Exhibit A (e.g. Dennis J. Dolan, Berry J. Treat, Jody L. Treat, James M. Jakicic, David J. Gebhardt, and Paul A. Krumm) were employed by Applicant (Coors Brewing Company) during development, production, testing, and completion of barley variety Moravian 22 (originally designated with temporary/experimental number C22 as noted above). By contract with its employees, Applicant is the exclusive owner of the present application and all subject matter therein including but not limited to exclusive rights in and (see reverse side)

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.